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DD/S&T-0810-64

MEMORANDUM FOR: Mr. Arthur Lundahl, Director, NPIC

SUBJECT: Joint DDS&T/NPIC Research Program

1. As indicated in previous discussions between members of our two organizations, it has become increasingly obvious that present uncertain quantitative knowledge of photo-interpreter performance is severely inhibiting our ability concerning the requirements and/or design of new reconnaissance systems. A recently conducted pilot research effort, in which your people made a significant contribution has convinced us that meaningful experimental research can be accomplished in this area.

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2. [redacted] and [redacted] of SAS/DDS&T have discussed with [redacted] the possibility of an NPIC funded and supported (as far as facilities and experimental subjects are concerned) research program, which would be jointly technically directed by a representative from each of our organizations. [redacted] has agreed to support such a program, which we presently feel will be at about a [redacted] year level for at least one year.

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3. SAS/DDS&T is in the process of outlining the areas of research; this outline can then be used with a similar one prepared by your people to form the basis for contractor discussions and work statements.

4. We look forward to an extremely interesting and productive joint effort; it will be the first attempt, as far as we know, in taking quantitative account of the performance of the photo-interpreter in developing design concepts. It is not too difficult, therefore, to anticipate the consequences to be profound indeed.

Edward B. Giller
Assistant Deputy Director
(Science and Technology)

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PROPOSAL

The combination of proper experimental designs, psychometric measures, carefully prepared and measured stimuli, and sound statistical treatment of data can yield significant and very useful information regarding the extraction of intelligence from aerial photographs. A typical example, although limited in scope, of this type of investigation is the recently completed study entitled "A Study of Photographic Image Recognition as a Function of Ground Resolution". Performance of studies such as this was recommended by the recently adjourned [redacted] Committee. 25X1

It is, therefore, proposed that additional investigations be made. Specifically, this proposal suggests that the following studies be performed:

An extensive and thorough examination of photographic-image recognition performance as a function of:

1. Ground resolution
2. Image modulation-granularity relationship and contrast reduction due to haze
3. Scene context
4. Sun altitude
5. Response perserveration

Aerial photography should be performed specifically for this investigation so that military, industrial and similar targets of particular interest can be employed.

The major tasks in this study consist of:

1. Preparation of experimental design
2. Review of program objectives
3. Aerial photography of specific targets
4. Preparation of photographs with specific image-quality characteristics (GEMS)
5. Determination of proper response measures by pretesting
6. Photointerpretation of GEMS
7. Analysis of PI responses
8. Formation of conclusions
9. Preparation of report.

It is expected that the experimental design required to obtain reliable and significant data will be quite complex. Therefore, it is recommended that immediately after formation of the experimental design, a thorough review be held of program objectives to evaluate the design, ascertain the relative potential and complexity of study of each variable, and to plan in detail the logistics of subsequent steps.

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The combination of efforts on the part of [redacted] 25X1
in performing successfully the above mentioned study is the basis for proposing that this same team perform this study.

The investigation is expected to require 18 months to complete. This period is, of course, directly related to the number and type of variables to be examined, and can therefore be modified accordingly. A budgetary cost and schedule are attached for your review.

[redacted] 25X1

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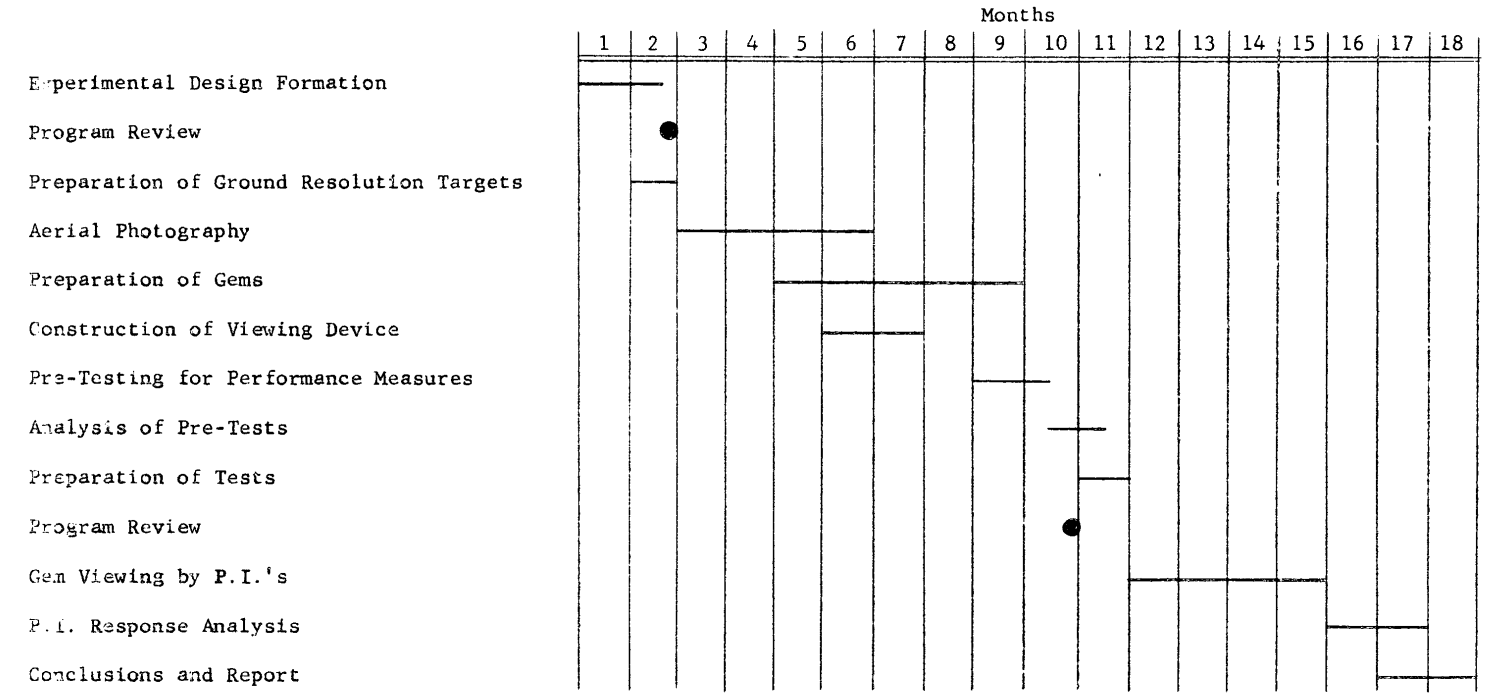

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